

**APPARATUS AND METHODS OF CONTROLLING SURFACE CHARGE
AND FOCUS**

Abstract of the Disclosure

One embodiment disclosed relates to a method of setting a surface charge of an area on a substrate to a desired level. The substrate is held on a stage, and a stage bias voltage applied to the stage is controlled. A flood of electrons is directed to the area. The stage bias voltage is controlled such that the surface charge of the area reaches an equilibrium at the desired level. Another embodiment disclosed relates to a method of auto-focusing a main electron beam incident upon an imaging area of a substrate. A monitor electron beam is generated and directed towards a monitoring area of the substrate at a non-perpendicular incidence angle. An in-focus band in data collected from the monitor beam is detected. The focal length of an objective lens focusing the main beam is adjusted based upon a position of the in-focus band.